=> d his

(FILE 'HOME' ENTERED AT 14:06:56 ON 11 MAR 2004)

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DISSABS, DDFB, DDFU, DGENE, DRUGB, DRUGMONOG2, ...' ENTERED AT 14:07:12 ON 11 MAR 2004

SEA (PSYCHROTROPH? OR PSYCHROPHIL? OR FLUORESCENS? OR SYRINGAE?

---

1 FILE ADISNEWS
404 FILE AGRICOLA
2 FILE ANABSTR
35 FILE AQUASCI
85 FILE BIOBUSINESS
10 FILE BIOCOMMERCE
564 FILE BIOSIS
423 FILE BIOTECHABS
423 FILE BIOTECHDS
725 FILE BIOTECHNO
794 FILE CABA
27 FILE CANCERLIT
775 FILE CAPLUS
66 FILE CEABA-VTB
1 FILE CEN
2 FILE CIN
2 FILE CONFSCI
4 FILE CROPB
114 FILE CROPU
117 FILE DISSABS
5 FILE DDFU
578 FILE DGENE
8 FILE DRUGU
7 FILE EMBAL
514 FILE EMBASE
687 FILE ESBIOBASE
129* FILE FEDRIP
11 FILE FROSTI
113 FILE FSTA
646 FILE GENBANK
1 FILE HEALSAFE
38 FILE IFIPAT
61 FILE JICST-EPLUS
697 FILE LIFESCI
357 FILE MEDLINE
5 FILE NTIS
6 FILE OCEAN
459 FILE PASCAL
10 FILE PHIN
9 FILE PROMT
927 FILE SCISEARCH
239 FILE TOXCENTER
476 FILE USPATFULL
12 FILE USPAT2
2 FILE VETU
72 FILE WPIDS
72 FILE WPINDEX
4 FILE NLDB

L1 QUE (PSYCHROTROPH? OR PSYCHROPHIL? OR FLUORESCENS? OR SYRINGAE?

FILE 'SCISEARCH, CABA, CAPLUS, BIOTECHNO, LIFESCI, ESBIOBASE, GENBANK, DGENE, BIOSIS, EMBASE, USPATFULL, PASCAL, BIOTECHDS, AGRICOLA, MEDLINE' ENTERED AT 14:11:33 ON 11 MAR 2004

L2 9026 S (PSYCHROTROPH? OR PSYCHROPHIL? OR FLUORESCENS? OR SYRINGAE?)
L3 2256 S L2 (S)(ISOLAT? OR PURIF?)
L4 1886 S L3 (S) (VECTOR? OR GENE? OR POLYNUCLEOT? OR INSERT? OR DNA?
L5 732 S L4 (S) FLUORESCENS?
L6 368 S L5 (S) COLI
L7 161 DUP REM L6 (207 DUPLICATES REMOVED)

L8 103 S L7 AND PY<=1999
L9 259 S L4 (S) (HEAT? OR TEMPERAT?)
L10 133 DUP REM L9 (126 DUPLICATES REMOVED)
L11 133 SORT L10 PY A

```
Welcome to STN International!  Enter x:x

LOGINID:ssspta1652dmr

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2


* * * * * * * * * *   Welcome to STN International   * * * * * * * * * *

 NEWS  1           Web Page URLs for STN Seminar Schedule - N. America
 NEWS  2           "Ask CAS" for self-help around the clock
 NEWS  3  SEP 09   CA/CAplus records now contain indexing from 1907 to the
                   present
 NEWS  4  DEC 08   INPADOC: Legal Status data reloaded
 NEWS  5  SEP 29   DISSABS now available on STN
 NEWS  6  OCT 10   PCTFULL: Two new display fields added
 NEWS  7  OCT 21   BIOSIS file reloaded and enhanced
 NEWS  8  OCT 28   BIOSIS file segment of TOXCENTER reloaded and enhanced
 NEWS  9  NOV 24   MSDS-CCOHS file reloaded
 NEWS 10  DEC 08   CABA reloaded with left truncation
 NEWS 11  DEC 08   IMS file names changed
 NEWS 12  DEC 09   Experimental property data collected by CAS now available
                   in REGISTRY
 NEWS 13  DEC 09   STN Entry Date available for display in REGISTRY and CA/CAplus
 NEWS 14  DEC 17   DGENE: Two new display fields added
 NEWS 15  DEC 18   BIOTECHNO no longer updated
 NEWS 16  DEC 19   CROPU no longer updated; subscriber discount no longer
                   available
 NEWS 17  DEC 22   Additional INPI reactions and pre-1907 documents added to CAS
                   databases
 NEWS 18  DEC 22   IFIPAT/IFIUDB/IFICDB reloaded with new data and search fields
 NEWS 19  DEC 22   ABI-INFORM now available on STN
 NEWS 20  JAN 27   Source of Registration (SR) information in REGISTRY updated
                   and searchable
 NEWS 21  JAN 27   A new search aid, the Company Name Thesaurus, available in
                   CA/CAplus
 NEWS 22  FEB 05   German (DE) application and patent publication number format
                   changes
 NEWS 23  MAR 03   MEDLINE and LMEDLINE reloaded
 NEWS 24  MAR 03   MEDLINE file segment of TOXCENTER reloaded
 NEWS 25  MAR 03   FRANCEPAT now available on STN

 NEWS EXPRESS  MARCH 5 CURRENT WINDOWS VERSION IS V7.00A, CURRENT
               MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
               AND CURRENT DISCOVER FILE IS DATED 3 MARCH 2004
 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS INTER    General Internet Information
 NEWS LOGIN    Welcome Banner and News Items
 NEWS PHONE    Direct Dial and Telecommunication Network Access to STN
 NEWS WWW      CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that
specific topic.

  All use of STN is subject to the provisions of the STN Customer
  agreement.  Please note that this agreement limits use to scientific
  research.  Use for software development or design or implementation
  of commercial gateways or other similar uses is prohibited and may
  result in loss of user privileges and other penalties.

  * * * * * * * * * * * * * * STN  Columbus * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 14:06:56 ON 11 MAR 2004

=> index bioscience medicine
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
```

```
                                                      ENTRY    SESSION
FULL ESTIMATED COST                                    0.21       0.21

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS,
       BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT,
       CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DISSABS, DDFB, DDFU,
       DGENE, DRUGB, DRUGMONOG2, ...' ENTERED AT 14:07:12 ON 11 MAR 2004

71 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view
search error messages that display as 0* with SET DETAIL OFF.

=> s (psychrotroph? or psychrophil? or fluorescens? or syringae?) (s) (express?)
          1   FILE ADISNEWS
        404   FILE AGRICOLA
          2   FILE ANABSTR
         35   FILE AQUASCI
         85   FILE BIOBUSINESS
         10   FILE BIOCOMMERCE
        564   FILE BIOSIS
        423   FILE BIOTECHABS
        423   FILE BIOTECHDS
        725   FILE BIOTECHNO
        794   FILE CABA
         27   FILE CANCERLIT
        775   FILE CAPLUS
         66   FILE CEABA-VTB
          1   FILE CEN
          2   FILE CIN
          2   FILE CONFSCI
          4   FILE CROPB
        114   FILE CROPU
        117   FILE DISSABS
  22 FILES SEARCHED...
          5   FILE DDFU
        578   FILE DGENE
          8   FILE DRUGU
  29 FILES SEARCHED...
          7   FILE EMBAL
        514   FILE EMBASE
        687   FILE ESBIOBASE
        129*  FILE FEDRIP
         11   FILE FROSTI
        113   FILE FSTA
        646   FILE GENBANK
          1   FILE HEALSAFE
         38   FILE IFIPAT
         61   FILE JICST-EPLUS
        697   FILE LIFESCI
        357   FILE MEDLINE
          5   FILE NTIS
  50 FILES SEARCHED...
          6   FILE OCEAN
        459   FILE PASCAL
         10   FILE PHIN
          9   FILE PROMT
        927   FILE SCISEARCH
        239   FILE TOXCENTER
        476   FILE USPATFULL
         12   FILE USPAT2
          2   FILE VETU
         72   FILE WPIDS
         72   FILE WPINDEX
          4   FILE NLDB

  48 FILES HAVE ONE OR MORE ANSWERS,   71 FILES SEARCHED IN STNINDEX

L1    QUE (PSYCHROTROPH? OR PSYCHROPHIL? OR FLUORESCENS? OR SYRINGAE?) (S) (EXPR
        ESS?)
```

```
=> d rankn
DISPLAY L# IS NOT VALID IN STNINDEX
Answer set was created in a file.  Enter DISPLAY HISTORY to see where
the answer set was created.  Use the File command to change to that
file, then display the answer.

=> d rank
F1          927   SCISEARCH
F2          794   CABA
F3          775   CAPLUS
F4          725   BIOTECHNO
F5          697   LIFESCI
F6          687   ESBIOBASE
F7          646   GENBANK
F8          578   DGENE
F9          564   BIOSIS
F10         514   EMBASE
F11         476   USPATFULL
F12         459   PASCAL
F13         423   BIOTECHABS
F14         423   BIOTECHDS
F15         404   AGRICOLA
F16         357   MEDLINE
F17         239   TOXCENTER
F18         129*  FEDRIP
F19         117   DISSABS
F20         114   CROPU
F21         113   FSTA
F22          85   BIOBUSINESS
F23          72   WPIDS
F24          72   WPINDEX
F25          66   CEABA-VTB
F26          61   JICST-EPLUS
F27          38   IFIPAT
F28          35   AQUASCI
F29          27   CANCERLIT
F30          12   USPAT2
F31          11   FROSTI
F32          10   BIOCOMMERCE
F33          10   PHIN
F34           9   PROMT
F35           8   DRUGU
F36           7   EMBAL
F37           6   OCEAN
F38           5   DDFU
F39           5   NTIS
F40           4   CROPB
F41           4   NLDB
F42           2   ANABSTR
F43           2   CIN
F44           2   CONFSCI
F45           2   VETU
F46           1   ADISNEWS
F47           1   CEN
F48           1   HEALSAFE


=> file f1-f16
COST IN U.S. DOLLARS                            SINCE FILE      TOTAL
                                                   ENTRY    SESSION
FULL ESTIMATED COST                                3.99       4.20

FILE 'SCISEARCH' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT 2004 THOMSON ISI

FILE 'CABA' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT (C) 2004 CAB INTERNATIONAL (CABI)

FILE 'CAPLUS' ENTERED AT 14:11:33 ON 11 MAR 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
```

```
COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'BIOTECHNO' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT (C) 2004 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'LIFESCI' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT (C) 2004 Cambridge Scientific Abstracts (CSA)


FILE 'ESBIOBASE' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT (C) 2004 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'GENBANK' ENTERED AT 14:11:33 ON 11 MAR 2004

FILE 'DGENE' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT (C) 2004 THOMSON DERWENT

FILE 'BIOSIS' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT (C) 2004 BIOLOGICAL ABSTRACTS INC.(R)

FILE 'EMBASE' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT (C) 2004 Elsevier Inc. All rights reserved.

FILE 'USPATFULL' ENTERED AT 14:11:33 ON 11 MAR 2004
CA INDEXING COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'PASCAL' ENTERED AT 14:11:33 ON 11 MAR 2004
Any reproduction or dissemination in part or in full,
by means of any process and on any support whatsoever
is prohibited without the prior written agreement of INIST-CNRS.
COPYRIGHT (C) 2004 INIST-CNRS. All rights reserved.

FILE 'BIOTECHABS' ACCESS NOT AUTHORIZED

FILE 'BIOTECHDS' ENTERED AT 14:11:33 ON 11 MAR 2004
COPYRIGHT (C) 2004 THOMSON DERWENT AND INSTITUTE FOR SCIENTIFIC INFORMATION

FILE 'AGRICOLA' ENTERED AT 14:11:33 ON 11 MAR 2004

FILE 'MEDLINE' ENTERED AT 14:11:33 ON 11 MAR 2004

=> s (psychrotroph? or psychrophil? or fluorescens? or syringae?) (s) (express?)
   8 FILES SEARCHED...
L2         9026 (PSYCHROTROPH? OR PSYCHROPHIL? OR FLUORESCENS? OR SYRINGAE?)
                (S) (EXPRESS?)

=> s l2 (s)(isolat? or purif?)
   8 FILES SEARCHED...
L3         2256 L2 (S)(ISOLAT? OR PURIF?)

=> s l3 (s) (vector? or gene? or polynucleot? or insert?)
   4 FILES SEARCHED...
   6 FILES SEARCHED...
   7 FILES SEARCHED...
<------User Break------>

SEARCH ENDED BY USER
   8 FILES SEARCHED...
SEARCH ENDED BY USER

=> s l3 (s) (vector? or gene? or polynucleot? or insert? or dna? or plasmid?)
   4 FILES SEARCHED...
   6 FILES SEARCHED...
   7 FILES SEARCHED...
   8 FILES SEARCHED...
  10 FILES SEARCHED...
  12 FILES SEARCHED...
L4         1886 L3 (S) (VECTOR? OR GENE? OR POLYNUCLEOT? OR INSERT? OR DNA? OR
                PLASMID?)

=> s l4 (s) fluorescens?
```

isolate.

L11 ANSWER 105 OF 133 USPATFULL on STN
TI Recombinant bacterial phytases and uses thereof

L11 ANSWER 106 OF 133 USPATFULL on STN
TI Novel antigen binding molecules for therapeutic, diagnostic, prophylactic, enzymatic, industrial, and agricultural applications, and methods for generating and screening thereof

L11 ANSWER 107 OF 133 USPATFULL on STN
TI Non-stochastic generation of genetic vaccines

L11 ANSWER 108 OF 133 USPATFULL on STN
TI End selection in directed evolution

L11 ANSWER 109 OF 133 USPATFULL on STN
TI Receptors for hypersensitive response elicitors and uses thereof

L11 ANSWER 110 OF 133 USPATFULL on STN
TI Saturation mutagenesis in directed evolution

L11 ANSWER 111 OF 133 USPATFULL on STN
TI Enzymes having alpha amylase activity and methods of use thereof

L11 ANSWER 112 OF 133 USPATFULL on STN
TI Synthetic ligation reassembly in directed evolution

L11 ANSWER 113 OF 133 USPATFULL on STN
TI Enzymes having alpha amylase activity and methods of use thereof

L11 ANSWER 114 OF 133 USPATFULL on STN
TI Recombinant constructs and systems for secretion of proteins via type III secretion systems

L11 ANSWER 115 OF 133 USPATFULL on STN
TI Enzymes having alpha amylase activity and methods of use thereof

L11 ANSWER 116 OF 133 USPATFULL on STN
TI Phytases, nucleic acids encoding them and methods for making and using them

L11 ANSWER 117 OF 133 USPATFULL on STN
TI Recombinant phytases and uses thereof

L11 ANSWER 118 OF 133 USPATFULL on STN
TI Saturation mutagenesis in directed evolution

L11 ANSWER 119 OF 133 USPATFULL on STN
TI Enzymes having glycosidase activity and methods of use thereof

L11 ANSWER 120 OF 133 USPATFULL on STN
TI Synthetic ligation reassembly in directed evolution

L11 ANSWER 121 OF 133 USPATFULL on STN
TI Recombinant bacterial phytases and uses thereof

L11 ANSWER 122 OF 133 USPATFULL on STN
TI Enzymes having carboxymethyl cellulase activity and methods of use thereof

L11 ANSWER 123 OF 133 USPATFULL on STN
TI Exonuclease-mediated nucleic acid reassembly in directed evolution

L11 ANSWER 124 OF 133 USPATFULL on STN
TI Novel methods of enzyme purification

L11 ANSWER 125 OF 133 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
TI Recombinant cold-adapted trypsin I from Atlantic cod-expression, purification, and identification;
recombinant enzyme production via plasmid expression in host cell for

use in medicine and flavor

L11 ANSWER 126 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
TI Cold-active esterase from Psychrobacter sp Ant300: gene cloning, characterization, and the effects of Gly -> Pro substitution near the active site on its catalytic activity and stability

L11 ANSWER 127 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
TI Recombinant cold-adapted trypsin I from Atlantic cod-expression, purification, and identification

L11 ANSWER 128 OF 133 USPATFULL on STN
TI End selection in directed evolution

L11 ANSWER 129 OF 133 USPATFULL on STN
TI Identification of essential genes in microorganisms

L11 ANSWER 130 OF 133 USPATFULL on STN
TI End selection in directed evolution

L11 ANSWER 131 OF 133 USPATFULL on STN
TI Enzymes having secondary amidases activity and methods of use thereof

L11 ANSWER 132 OF 133 USPATFULL on STN
TI Phospholipases, nucleic acids encoding them and methods for making and using them

L11 ANSWER 133 OF 133 USPATFULL on STN
TI Synthetic ligation reassembly in directed evolution

=> d l11 ibib abs 2 8 11 18 26 28 30 34 49 51 65 67 73 99 100 124

L11 ANSWER 2 OF 133 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-10994 BIOTECHDS
TITLE: Identifying bioactivities or biomolecules by screening clones from a gene library generated from more than one organism; enzyme identification using high throughput screening of Streptomyces venezuelae, Escherichia coli, Actinomyces sp. DNA library
AUTHOR: SHORT J M; KELLER M
PATENT ASSIGNEE: DIVERSA CORP
PATENT INFO: US 2002001809 3 Jan 2002
APPLICATION INFO: US 1997-848095 16 Jun 1997
PRIORITY INFO: US 2001-848095 3 May 2001
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2002-194904 [25]
AN 2002-10994 BIOTECHDS
AB DERWENT ABSTRACT:
NOVELTY - A method for identifying bioactivities or biomolecules, comprising **inserting** a bioactive substrate into clones from a **gene** library **generated** from more than one organism and screening the clones for a change in the substrate, is new.
DETAILED DESCRIPTION - A method for identifying bioactivities or biomolecules using high-throughput screening of nucleic acids comprising:(a) providing a **gene** library comprising several clones (the nucleic acid for **generating** the library is obtained from more than one organism); (b) **inserting** a bioactive substrate into the clones (a bioactivity or biomolecule produced by the clones is detectable by a difference in the substrate before and after contact with the clones); (c) screening the clones with an assay or analyzer that detects a bioactivity or biomolecule; and (d) identifying clones detected as positive for a change in the substrate (a change in the substrate is indicative of **DNA** that encodes a bioactivity or biomolecule).
BIOTECHNOLOGY - Preferred Method: The clones and substrate are encapsulated in gel microdroplets before screening, optionally together with an indicator cell. The samples are **heated** before step (b), preferably at 70degreesC for 30 minutes. The bioactive substrate is 5-dodecanoylamino-fluorescein-di-D-galactopyranoside (C12FDG) or another

compound with a lipophilic tail. The library is biopanned and/or normalized before step (b). The microdroplets are screened using a fluorescence analyzer, especially a fluorescence-activated cell sorting (FACS) apparatus, or a chromogenic analyzer or by immunoassay. Preferred Library: The **gene** library is an **expression** library **generated** from extremophile **DNA** in prokaryotic cells, either directly in Streptomyces cells, especially Streptomyces venezuelae, or in Escherichia coli cells followed by transfer to a myceliate bacterium or fungus, preferably an Actinomyces or Streptomyces species, especially Streptomyces venezuelae.

USE - The method is especially useful for identifying enzymes in extremophiles, especially where the enzymes are lipases, esterases, proteases, glycosidases, glycosyl transferases, phosphatases, kinases, mono- and dioxygenases, haloperoxidases, lignin peroxidases, diarylpropane peroxidases, epoxide hydrolases, nitrile hydratases, nitrilases, transaminases, amidases or acylases, and the extremophiles are thermophiles, hyperthermophiles, **psychrophiles**, halophiles, **psychrotrophs**, alkalophiles or acidophiles.

ADVANTAGE - The method can be applied to nucleic acids **isolated** directly or indirectly from the environment using flow cytometry systems normally used for sorting eukaryotic cells.

EXAMPLE - No relevant examples are given.(40 pages)

L11 ANSWER 8 OF 133 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2003-14535 BIOTECHDS
TITLE: Detecting hydrolase activity, useful particularly for identifying variant enzymes with altered properties, comprises detecting acetic acid released from acetate ester; stereospecific substrate for Pseudomonas fluorescens recombinant esterase detection
AUTHOR: BORNSCHEUER U; BAUMANN M
PATENT ASSIGNEE: BASF AG
PATENT INFO: DE 10124799 28 Nov 2002
APPLICATION INFO: DE 2001-1024799 21 May 2001
PRIORITY INFO: DE 2001-1024799 21 May 2001; DE 2001-1024799 21 May 2001
DOCUMENT TYPE: Patent
LANGUAGE: German
OTHER SOURCE: WPI: 2003-343904 [33]
AN 2003-14535 BIOTECHDS
AB DERWENT ABSTRACT:

NOVELTY - Detecting hydrolases (I) comprises incubating a sample with an ester (II) of acetic acid with an achiral, chiral or prochiral alcohol, then detecting the acetic acid released.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (1) Test kit for the new method comprising, apart from usual components, at least one (pro)chiral substrate (IIa) for (I); and (2) **Isolating** natural or synthetic hydrolase mutants or variants with altered property profiles.

BIOTECHNOLOGY - Preferred Process: Acetic acid is detected in a coupled enzymatic test, particularly optically. The sample is a crude cell extract, supernatant from a culture of microbial, plant or animal cells, or is derived from a plant, animal, organ or their parts. The entire reaction is done in a microtiter plate. Especially acetic acid is converted enzymatically to acetyl-CoA, which is reacted enzymatically to oxaloacetate to form citrate, where the oxaloacetate is produced from L-malate in presence of NAD+ (oxidized nicotinamide-adenine dinucleotide), resulting in formation of reduced NAD (1 mole per mole acetic acid), and this is monitored at 340 nm. (I)-catalyzed formation of acetate is the rate-determining step in the detection process. The method is particularly a high-throughput screen for detecting (I) activity and/or selectivity in extracts of natural or **genetically** modified organisms, especially to determine enantio- or stereo-selectivity and/or influence of external factors. Preferred Enzymes: (I) is an estearse, lipase, amidase, acylase or protease. Preferred Method: In method (2), a sample is prepared from a prokaryotic or eukaryotic organism and analyzed by the new method. If hydrolase activity is detected, the property profile of the mutant/variant is determined and compared with that for a reference enzyme, and those mutants/variants with altered properties are **isolated**. The method is particularly applied to recombinant microorganisms that **express** a hydrolase sequence that has been subjected to

mutagenesis or directed evolution. These are screened for alterations in activity, enantioselectivity, **temperature** stability and stability in aqueous and/or organic media.

USE - The method is used to detect hydrolases in microbial, plant or animal cells, especially to **isolate** those, produced in recombinant microorganisms by mutagenesis or directed evolution, that have altered properties. The altered enzymes are useful for production of chiral esters and alcohols.

ADVANTAGE - The method can detect variant (I) with improved activity, enantioselectivity and/or stability (to **temperature** or reaction media). It is rapid and inexpensive, especially suitable for high throughput screening of libraries of mutant microorganisms.

EXAMPLE - A recombinant esterase from Pseudomonas **fluorescens** was tested, in microtiter plates, for hydrolysis of (R,S)alpha-phenylethyl acetate, in presence of acetyl-CoA synthase, citrate synthase, L-malate dehydrogenase, L-malate, adenosine triphosphate, NAD+ (oxidized nicotinamide-adenine dinucleotide) and coenzyme A, to provide a coupled enzymatic system that converts acetate with ultimate formation of citrate, with reduction of NAD+ to NADH. The extinction of NADH at 340 nm was monitored; its rate of change was a linear function of both enzyme concentration and substrate concentration. (13 pages)

L11 ANSWER 11 OF 133 USPATFULL on STN
ACCESSION NUMBER: 84:44199 USPATFULL
TITLE: Ice nucleating microorganisms
INVENTOR(S): Orser, Cindy S., Berkeley, CA, United States
Lindow, Steven E., Berkeley, CA, United States
Panopoulos, Nickolas J., Oakland, CA, United States
Staskawicz, Brian J., Castro Valley, CA, United States
PATENT ASSIGNEE(S): The Regents of the University of California, Berkeley, CA, United States (U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 4464473		19840807	
APPLICATION INFO.:	US 1982-371162		19820423	(6)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Wiseman, Thomas G.
ASSISTANT EXAMINER: Martinell, James
LEGAL REPRESENTATIVE: Rowland, Bertram I.
NUMBER OF CLAIMS: 13
EXEMPLARY CLAIM: 1
LINE COUNT: 328
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB DNA sequences encoding for ice nucleation activity are isolated and introduced into unicellular hosts. The modified hosts demonstrate ice nucleation activity analogous to the DNA source host. The cellular products find use in inhibiting supercooling.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L11 ANSWER 18 OF 133 CABA COPYRIGHT 2004 CABI on STN
ACCESSION NUMBER: 91:61090 CABA
DOCUMENT NUMBER: 19910505423
TITLE: Alternative hosts for Bacillus thuringiensis delta-endotoxin genes
AUTHOR: Feitelson, J. S.; Quick, T. C.; Gaertner, F.; Baker, R.R. [EDITOR]; Dunn, P.E. [EDITOR]
CORPORATE SOURCE: Mycogen Corporation, 5451 Oberlin Drive, San Diego, CA 92121, USA.
SOURCE: UCLA Symposia on Molecular and Cellular Biology, (1990) Vol. 112, pp. 561-571. 17 ref.
Publisher: Alan R. Liss, Inc. New York
Price: Conference paper; Journal article
Meeting Info.: New directions in biological control. Alternatives for suppressing agricultural pests and diseases. Proceedings of a UCLA Colloquium held at Frisco, Colorado, January 20-27, 1989.
ISBN: 0-471-56681-0

PUB. COUNTRY: United States
DOCUMENT TYPE: Journal
LANGUAGE: English
ENTRY DATE: Entered STN: 19941101
Last Updated on STN: 19941101

AB In **general**, agricultural application of B. thuringiensis has been limited to the use of formulated spore-crystal mixtures that typically degrade within 1-3 days following application. Degradation appears to be due to a number of factors including: cycles in **temperature** and humidity, proteolytic and microbial activity, photo-oxidation, and chemical interactions. A novel pesticide delivery system was developed that overcomes these drawbacks by effectively microencapsulating the pesticidal protein within a stabilized Pseudomonas **fluorescens** cell. Biotoxin **genes isolated** from B. thuringiensis were introduced into P. **fluorescens** with the appropriate **plasmid vectors**. The biotoxin **expressed** in P. **fluorescens** formed a crystalline array similar to that seen in B. thuringiensis, with **expression** levels up to 30%. Unlike B. thuringiensis, the cells of P. **fluorescens** did not lyse, not did they sporulate, during stationary growth. A chemical fixative was added to the complete fermentation broth to rapidly kill the biotoxin-containing P. **fluorescens** and to simultaneously stabilize the cells. This stabilization process strengthened the cell wall by crosslinking, and inactivated biotoxin degrading proteolytic enzymes. The process resulted in an active stable biotoxin encapsulated within a nonviable cell. The bioencapsulated products (MCap) exhibited enhanced field persistence and are environmentally acceptable; the microorganism will not spread from the site of application. This delivery system is potentially applicable to a variety of pesticidal proteins.

L11 ANSWER 26 OF 133 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 1995-10495 BIOTECHDS
TITLE: Extremozymes: expanding the limits of biocatalysis; thermostable enzyme, psychrophilic enzyme, halophilic enzyme, barophilic enzyme biocatalyst enzyme engineering and solvent engineering; a review
AUTHOR: Adams M W W; Perler F B; *Kelly R M
CORPORATE SOURCE: Univ.Georgia; New-England-Biolabs; Univ.North-Carolina-State
LOCATION: Department of Chemical Engineering, North Carolina State University, Raleigh, NC 27695, USA.
SOURCE: Bio/Technology; (1995) 13, 7, 662-68
CODEN: BTCHDA
ISSN: 0733-222X
DOCUMENT TYPE: Journal
LANGUAGE: English
AN 1995-10495 BIOTECHDS
AB Biocatalysts need not be constrained to mild conditions and can be considered at pH values, **temperatures**, pressures and in ionic and solvent environments thought to be destructive to biomolecules. It has been shown that even conventional enzymes will catalyze reactions in solvents other than water. The intrinsic basis for biological activity under extreme conditions is only starting to be addressed, as are associated applications. Extremozymes are reviewed with respect to: microorganisms from extreme environments; identification, **isolation** and production of extremozymes e.g. **psychrophilic** enzymes, halophilic enzymes, thermostable enzymes and barophilic enzymes; molecular biology of archaea; applications of thermophilic **DNA** modifying enzymes; cloning and **expression** of **genes** encoding extremozymes from thermophilic archaea; mechanisms of extremozyme stability; solvent engineering; high pressure applications; and whole cell biocatalysts. Modification of enzymes to improve their ranges of stability and activity will open new opportunities for using biocatalysis. (86 ref)

L11 ANSWER 28 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 95:431831 SCISEARCH
THE GENUINE ARTICLE: RD715
TITLE: ISOLATION OF LUX REPORTER GENE FUSIONS IN PSEUDOMONAS-FLUORESCENS DF57 INDUCIBLE BY NITROGEN OR PHOSPHORUS STARVATION
AUTHOR: KRAGELUND L (Reprint); CHRISTOFFERSEN B; NYBROE O;

DEBRUIJN F J
CORPORATE SOURCE: MICHIGAN STATE UNIV, NSF CTR MICROBIAL ECOL, E LANSING, MI, 48824 (Reprint); MICHIGAN STATE UNIV, DEPT ENERGY, PLANT RES LAB, E LANSING, MI, 48824; MICHIGAN STATE UNIV, DEPT MICROBIOL, E LANSING, MI, 48824; ROYAL VET & AGR UNIV, MICROBIOL SECT, DK-1958 FREDERIKSBERG C, DENMARK
COUNTRY OF AUTHOR: USA; DENMARK
SOURCE: FEMS MICROBIOLOGY ECOLOGY, (JUN 1995) Vol. 17, No. 2, pp. 95-106.
ISSN: 0168-6496.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 39
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We have used transposon Tn5 mutagenesis to **insert** a promoter-less luxAB **gene**-cassette into multiple locations in the chromosome of a Pseudomonas **fluorescens** strain, thereby bringing the Ewe reporter **genes** under the control of resident promoters. To identify reporter bacteria responsive to nutritional stresses we **isolated** and characterized a collection of 23 **gene** fusions consistently displaying bioluminescence under nitrogen starvation and 12 phosphorus starvation inducible fusions. Bioluminescence of one group of mutants was induced after 4 to 6 h of starvation and was continuously **expressed** at a high level, whereas a second group was induced earlier and the bioluminescence subsequently declined. Finally, a third group was induced later after 24 h of starvation. Four strains were selected for further study, namely, two Tn5-lux containing strains which were induced by nitrogen starvation and two strains induced by phosphorus starvation. Another two strains, carrying constitutively **expressed** lux fusions, were included as controls. An analysis of biochemical characters, as well as LPS and protein composition, did not reveal any discernible differences between the mutants and the wild-type strain. Survival experiments with the selected Tn5-lux containing strains showed that they all performed comparably to the wild-type under carbon and nitrogen starvation, whereas some of the strains were less resistant to phosphorus starvation. **Expression** of bioluminescence by the mutants during carbon, nitrogen and phosphorus starvation was detectable even after 18 days and was not affected by high osmolarity or low **temperature**.

L11 ANSWER 30 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 96:408530 SCISEARCH
THE GENUINE ARTICLE: UM108
TITLE: CHARACTERIZATION OF MALATE-DEHYDROGENASE FROM DEEP-SEA PSYCHROPHILIC VIBRIO SP STRAIN NO-5710 AND CLONING OF ITS GENE
AUTHOR: OHKUMA M (Reprint); OHTOKO K; TAKADA N; HAMAMOTO T; USAMI R; KUDO T; HORIKOSHI K
CORPORATE SOURCE: INST PHYS & CHEM RES, MICROBIOL LAB, 2-1 HIROSAWA, WAKO, SAITAMA 35101, JAPAN (Reprint); JAPAN MARINE SCI & TECHNOL CTR, DEEPSTAR PROGRAM, WAKO, SAITAMA 35101, JAPAN; UNIV TOKYO, DEPT APPL CHEM, KAWAGOE, SAITAMA 350, JAPAN
COUNTRY OF AUTHOR: JAPAN
SOURCE: FEMS MICROBIOLOGY LETTERS, (01 APR 1996) Vol. 137, No. 2-3, pp. 247-252.
ISSN: 0378-1097.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 12
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A metabolic key enzyme malate dehydrogenase (MDH) was **purified** from a deep-sea **psychrophilic** bacterium, Vibrio sp. strain no. 5710. The enzyme displayed an optimal activity shifted toward lower **temperature** and a pronounced **heat** lability. A **gene** encoding this enzyme was **isolated** and cloned. Recombinant Escherichia coli cells harboring the **isolated** clone **expressed** MDH activity with **temperature** stability identical to that of the parental **psychrophile**. Nucleotide sequencing of the **gene** revealed that its primary sequence was

similar to that of a mesophile E. coli MDH (78% amino acid identity), for which the three-dimensional structure is known. The enzyme is thus suitable for the analysis of molecular adaptations to low **temperatures**.

L11 ANSWER 34 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 97:635383 SCISEARCH
THE GENUINE ARTICLE: XR909
TITLE: Sequencing and expression of the gene encoding a cold-active citrate synthase from an Antarctic bacterium, strain DS2-3R
AUTHOR: Gerike U; Danson M J; Russell N J; Hough D W (Reprint)
CORPORATE SOURCE: UNIV BATH, DEPT BIOL & BIOCHEM, CTR EXTRAMOPHILE RES, BATH BA2 7AY, AVON, ENGLAND (Reprint); UNIV BATH, DEPT BIOL & BIOCHEM, CTR EXTRAMOPHILE RES, BATH BA2 7AY, AVON, ENGLAND; UNIV LONDON WYE COLL, DEPT BIOL SCI, ASHFORD TN25 5AH, KENT, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: EUROPEAN JOURNAL OF BIOCHEMISTRY, (15 AUG 1997) Vol. 248, No. 1, pp. 49-57.
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY 10010.
ISSN: 0014-2956.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 29
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The **gene** encoding citrate synthase from a novel bacterial **isolate** (DS2-3R) from Antarctica has been cloned, sequenced and over **expressed** in Escherichia coli. Both the recombinant enzyme and the native enzyme, **purified** from DS2-3R, are cold-active, with a **temperature** optimum of 31 degrees C. In addition the enzymes are rapidly inactivated at 45 degrees C, and show significant activity at 10 degrees C and below. Comparison of amino acid sequences indicates that DS2-3R citrate synthase is most closely related to the enzyme from gram-positive bacteria. The amino acid sequence of the DS2-3R enzyme shows several features previously recognised in other cold-active enzymes, including an extended surface loop, an increase in the occurrence of charged residues and a decrease in the number of proline residues in loops. Other changes observed in some **psychrophilic** enzymes, such as a decrease in isoleucine content and in arginine/(arginine + lysine) content, were not seen in this case.

L11 ANSWER 49 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2000:215771 SCISEARCH
THE GENUINE ARTICLE: 293FE
TITLE: A bioluminescence assay for screening thermoregulated genes in a psychrotrophic bacterium Pseudomonas fluorescens
AUTHOR: Regeard C; Merieau A; GuespinMichel J F (Reprint)
CORPORATE SOURCE: FAC SCI ROUEN, LAB MICROBIOL FROID, F-76821 MONT ST AIGNAN, FRANCE (Reprint); FAC SCI ROUEN, LAB MICROBIOL FROID, F-76821 MONT ST AIGNAN, FRANCE
COUNTRY OF AUTHOR: FRANCE
SOURCE: JOURNAL OF APPLIED MICROBIOLOGY, (JAN 2000) Vol. 88, No. 1, pp. 183-189.
Publisher: BLACKWELL SCIENCE LTD, P O BOX 88, OSNEY MEAD, OXFORD OX2 0NE, OXON, ENGLAND.
ISSN: 1364-5072.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 23
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Random transcription fusion delivery, with bacterial luciferase **genes** as reporter, was performed in the **psychrotrophic** bacterium Pseudomonas **fluorescens**. Direct screening on plates of the **insertions** allowed the **isolation** of fusions into thermoregulated **genes** with good accuracy, either in a library of **insertion** fusions, or after **genetic** transfer of a

putative regulatory mutation. Using this method, it was shown that in Ps. **fluorescens**, nearly 40% of the **genes** are thermoregulated and belong to at least three classes according to the maximal **temperature** of **expression** of the fused **genes**. This is more than had been estimated by a previous method, and demonstrates the importance of thermoregulation in **psychrotrophic** bacteria. As this reporter is the first to be used for direct screening for **genes** regulated by **temperature**, it should be of great value in the study of mechanisms involved in adaptation to this environmental factor.

L11 ANSWER 51 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2000:120665 SCISEARCH
THE GENUINE ARTICLE: 281NZ
TITLE: Cloning of phosphatase I gene from a psychrophile, Shewanella sp., and some properties of the recombinant enzyme
AUTHOR: Tsuruta H; Aizono Y (Reprint)
CORPORATE SOURCE: KOBE UNIV, FAC AGR, DEPT BIOFUNCT CHEM, BIOL CHEM LAB, NADA KU, KOBE, HYOGO 6578501, JAPAN (Reprint); KOBE UNIV, FAC AGR, DEPT BIOFUNCT CHEM, BIOL CHEM LAB, NADA KU, KOBE, HYOGO 6578501, JAPAN
COUNTRY OF AUTHOR: JAPAN
SOURCE: JOURNAL OF BIOCHEMISTRY, (JAN 2000) Vol. 127, No. 1, pp. 143-149.
Publisher: JAPANESE BIOCHEMICAL SOC, ISHIKAWA BLDG-3F, 25-16 HONGO-5-CHOME, BUNKYO-KU, TOKYO 113, JAPAN.
ISSN: 0021-924X.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 26
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB **Psychrophilic** phosphatase I from Shewanella sp. is a cold enzyme that was found as a novel protein-tyrosine-phosphatase (PTPase, EC 3.1.3.48) with a histidine as its catalytic residue [Tsuruta and Aizono (1999) J. Biochem. 125, 690-695]. Here, we determined the nucleotide sequence of a **DNA** fragment (2,004 bp) containing the phosphatase I **gene** by cloning with polymerase chain reaction (PCR) and inverted PCR techniques. The deduced amino acid sequence, of the enzyme contained a conserved region of protein-serine/threonine-phosphatase (PPase). The 38.5 kDa-recombinant protein **expressed** in Escherichia coli was **purified** to homogeneity by glutathione-Sepharose 4B column chromatography, treatment with endoproteinase and Mono-Q column chromatography. The recombinant enzyme had a specific activity of 49.4 units and, like native **psychrophilic** phosphatase I, exhibited high catalytic activity at low **temperature** and PTPase activity.

L11 ANSWER 65 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2002:924122 SCISEARCH
THE GENUINE ARTICLE: 613CX
TITLE: Characterization of a cloned subtilisin-like serine proteinase from a psychrotrophic Vibrio species
AUTHOR: Arnorsdottir J; Smaradottir R B; Magnusson O T; Thorbjarnardottir S H; Eggertsson G; Kristjansson M M (Reprint)
CORPORATE SOURCE: Univ Iceland, Inst Sci, Dept Biochem, Dunhaga 3, IS-107 Reykjavik, Iceland (Reprint); Univ Iceland, Inst Sci, Dept Biochem, IS-107 Reykjavik, Iceland; Univ Iceland, Inst Biol, IS-107 Reykjavik, Iceland
COUNTRY OF AUTHOR: Iceland
SOURCE: EUROPEAN JOURNAL OF BIOCHEMISTRY, (NOV 2002) Vol. 269, No. 22, pp. 5536-5546.
Publisher: BLACKWELL PUBLISHING LTD, P O BOX 88, OSNEY MEAD, OXFORD OX2 0NE, OXON, ENGLAND.
ISSN: 0014-2956.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 70
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The **gene** encoding a subtilisin-like serine proteinase in the **psychrotrophic** Vibrio sp. PA44 has been successfully cloned, sequenced and **expressed** in Escherichia coli. The **gene** is 1593 basepairs and encodes a precursor protein of 530 amino acid residues with a calculated molecular mass of 55.7 kDa. The enzyme is **isolated**, however, a an active 40.6-kDa proteinase, without a 139 amino acid residue N-terminal prosequence. Under mild conditions the enzyme undergoes a further autocatalytic cleavage to give a 29.7-kDa proteinase that retains full enzymatic activity. The deduced amino acid sequence of the enzyme has high homology to proteinases of the proteinase K family of subtilisin-like proteinases. With respect to the enzyme characteristics compared in this study the properties of the wild-type and recombinant proteinases are the same. Sequence analysis revealed that especially with respect to the thermophilic homologues, aqualysin I from Thermus aquaticus and a proteinase from Thermus strain Rt41A, the cold-adapted Vibrio-proteinase has a higher content of polar/uncharged amino acids, a well a aspartate residues. The thermophilic enzymes had a higher content of arginines, and relatively higher number of hydrophobic amino acids and a higher aliphatic index. These factors may contribute to the adaptation of these proteinases to different **temperature** conditions.

L11 ANSWER 67 OF 133 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2002:392586 SCISEARCH
THE GENUINE ARTICLE: 547YK
TITLE: Cloning of cold-active alkaline phosphatase gene of a psychrophile, Shewanella sp., and expression of the recombinant enzyme
AUTHOR: Murakawa T; Yamagata H; Tsuruta H; Aizono Y (Reprint)
CORPORATE SOURCE: Kobe Univ, Fac Agr, Dept Biofunct Chem, Biol Chem Lab, Nada Ku, Kobe, Hyogo 6578501, Japan (Reprint)
COUNTRY OF AUTHOR: Japan
SOURCE: BIOSCIENCE BIOTECHNOLOGY AND BIOCHEMISTRY, (APR 2002) Vol. 66, No. 4, pp. 754-761.
Publisher: JAPAN SOC BIOSCI BIOTECHN AGROCHEM, JAPAN ACAD SOC CTR BLDG, 2-4-6 YAYOI BUNKYO-KU, TOKYO, 113, JAPAN.
ISSN: 0916-8451.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 24
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A **psychrophilic** alkaline phosphatase (EC 3.1.3.1) from Shewanella sp. is a cold-active enzyme that has high catalytic activity at low **temperature** [Ishida et al. (1998) Blosci. Blotechnol. Biochem., 62, 2246-2250]. Here, we identified the nucleotide sequence of a **gene** encoding the enzyme after cloning with the polymerase chain reaction (PCR) and inverted PCR techniques. The deduced amino acid sequence of the enzyme contained conserved amino acids found among mesophilic alkaline phosphatases and showed some structural characteristics including a high content of hydrophobic amino acid residues and the lack of single alpha-helix compared with the alkaline phosphatase of Escherichia coli, which were possibly efficient for catalytic reaction at low **temperatures**. The recombinant enzyme **expressed** in E. coli was **purified** to homogeneity with the molecular mass of 41 kDa. The recombinant enzyme had a specific activity of 1,500 units/mg and had high catalytic activity at low **temperatures**.

L11 ANSWER 73 OF 133 USPATFULL on STN
ACCESSION NUMBER: 2002:287601 USPATFULL
TITLE: Enzymes having alpha-galactosidase activity and methods of use thereof
INVENTOR(S): Short, Jay M., Rancho Santa Fe, CA, UNITED STATES
Murphy, Dennis, Malvern, PA, UNITED STATES
Reid, John, Ardmore, PA, UNITED STATES
Mathur, Eric J., Carlsbad, CA, UNITED STATES
PATENT ASSIGNEE(S): Diversa Corporation (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002160464	A1	20021031

APPLICATION INFO.: US 2002-114083 A1 20020401 (10)
RELATED APPLN. INFO.: Division of Ser. No. US 2001-886400, filed on 20 Jun 2001, PENDING Continuation-in-part of Ser. No. US 2000-619072, filed on 19 Jul 2000, PENDING Division of Ser. No. US 1999-407806, filed on 28 Sep 1999, PENDING Division of Ser. No. US 1996-613220, filed on 8 Mar 1996, GRANTED, Pat. No. US 5958751
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: GARY CARY WARE & FRIENDENRICH LLP, 4365 EXECUTIVE DRIVE, SUITE 1600, SAN DIEGO, CA, 92121-2189
NUMBER OF CLAIMS: 1
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 7 Drawing Page(s)
LINE COUNT: 2958
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention relates to .alpha.-galactosidase and to polynucleotides encoding the .alpha.-galactosidase. In addition methods of designing new .alpha.-galactosidases and method of use thereof are also provided. The .alpha.-galactosidases have increased activity and stability at increased pH and temperature.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L11 ANSWER 99 OF 133 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2003-21209 BIOTECHDS
TITLE: Cloning, heterologous expression, renaturation, and characterization of a cold-adapted esterase with unique primary structure from a psychrotroph Pseudomonas sp strain B11-1;
recombinant enzyme production via plasmid expression
AUTHOR: SUZUKI T; NAKAYAMA T; CHOO DW; HIRANO Y; KURIHARA T; NISHINO T; ESAKI N
CORPORATE SOURCE: Kyoto Univ; Tohoku Univ
LOCATION: Esaki N, Kyoto Univ, Inst Chem Res, Microbial Biochem Lab, Uji, Kyoto 6110011, Japan
SOURCE: PROTEIN EXPRESSION AND PURIFICATION; (2003) 30, 2, 171-178
ISSN: 1046-5928
DOCUMENT TYPE: Journal
LANGUAGE: English
AN 2003-21209 BIOTECHDS
AB AUTHOR ABSTRACT - A **Gene** coding for an esterase (PsEst1, 1911 bp in length) of the **psychrotrophic** bacterium Pseudomonas sp. B11-1 **isolated** from Alaskan soil was cloned and sequenced. The deduced amino acid sequence revealed a protein of 637 amino acid residues with a molecular mass of 69 kDa. Although the **expression** product, PsEst1, showed no appreciable sequence similarity (less than 15% identity) to any known proteins with the established biochemical functions, it is expected to be related to the alpha/beta hydrolase superfamily because it shared sequence motifs that have been identified with this superfamily. For example, a unique "nucleophilic 6 40 38 elbow" motif. -Gly(36)-Asp-Ser-Leu-Asn(40)-, was identified, and Ser(38) was predicted to constitute a catalytic triad with Asp(162) and His(303). PsEst1 was overexpressed using a T7 RNA polymerase transcription (pET21a) system in the Escherichia coli BL21(DE3) cells as an inclusion body. A Soluble denatured form of the enzyme was **purified** to homogeneity in the presence of 8 M urea, and the catalytically active form of the enzyme could be obtained by subsequent removal of urea by dialysis, where the addition of 0.1% Triton X-100 was essential for the efficient renaturation of the enzyme. To our knowledge, this was the first example of the successful renaturation of the recombinant cold-adapted enzyme. The enzyme efficiently hydrolyzed vinyl and aryl esters with the C-4-C-6 acyl chain. The activation energy of the enzymatic p-nitrophenyl butyrate hydrolysis (20.1 kcal/mol at 10 degreesC) was significantly lower than the value (79.9 kcal/mol) of the mesophilic lipase. It was observed that the K-m values for p-nitrophenyl butyrate in the growth **temperature** range of strain B11-1 (5-15 degreesC) were lower than those at higher **temperatures**. (C) 2003 Elsevier Science (USA). All rights reserved.
DERWENT ABSTRACT: A 1.9-kbp **DNA** fragment encoding the PsEst1 **gene** was amplified by polymerase chain reaction (PCR) using

plasmid pUC118-PsEst1 as a template with primers. The entire nucleotide sequence of the amplified **DNA** was confirmed by sequencing in both orientations. The amplified fragment was then digested with NdeI and BamHI, followed by ligation with NdeI/BamHl-digested pET-21a to produce pET-PsEstl. Escherichia coli BL21 (DE3) cells transformed with pET-PsEstI were cultivated in an Luria-Bertani LB medium containing 200ug/ml ampicillin at 37 deg with shaking. Isopropyl-beta-D-thiogalactopyranoside was added to the medium at a final concentration of 2.0 mM when the turbidity at 600 nm of culture reached 0.8. After another 8 hr cultivation, the cells were harvested. It must be noted that the **expression** levels of PsEstl at 15-37 deg did not significantly differ from each other and only inclusion bodies of this protein could be obtained at these **temperatures** with this host-**vector** system. Thus, for subsequent renaturation studies, PsLipI was overexpressed at 37 deg, where the host bacterium could grow most rapidly(8 pages)

L11 ANSWER 100 OF 133 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2003-02464 BIOTECHDS
TITLE: Cloning and characterization of katA, encoding the major monofunctional catalase from Xanthomonas campestris pv. phaseoli and characterization of theencoded catalase KatA; vector-mediated catalase gene transfer and expression in host cell for recombinant protein production and cloning
AUTHOR: CHAUVATCHARIN N; VATTANAVIBOON P; SWITALA J; LOEWEN PC; MONGKOLSUK S
CORPORATE SOURCE: Chulabhorn Res Inst; Univ Manitoba; Mahidol Univ
LOCATION: Mongkolsuk S, Chulabhorn Res Inst, Biotechnol Lab, Lak Si, Bangkok 10210, Thailand
SOURCE: CURRENT MICROBIOLOGY; (2003) 46, 2, 83-87
ISSN: 0343-8651
DOCUMENT TYPE: Journal
LANGUAGE: English
AN 2003-02464 BIOTECHDS
AB AUTHOR ABSTRACT - The first cloning and characterization of the **gene** katA, encoding the majorcatalase (KatA), from Xanthomonas is reported. A reverse **genetic** approachusing a synthesized katA-specific **DNA** probe to screen a X. campestris pv. phaseoli genomic library was employed. A positively hybridizing clone designated pKat29 that contained a full-length katA was **isolated**. Analysis of thenucleotide sequence revealed an open reading frame of 1,521 bp encoding a507-amino acid protein with a theoretical molecular mass of 56 kDa. The deduced amino acid sequence of KatA revealed 84% and 78% identity to CatF of Pseudomonas **syringae** and KatB of P. aeruginosa, respectively. Phylogenetic analysis places Xanthomonas katA in the clade I group of bacterial catalases. Unexpectedly, **expression** of katA in a heterologous Escherichia coli hostresulted in a **temperature**-sensitive **expression**. The KatA enzyme was **purified** from an overproducing mutant of X. campestris and was characterized. It has apparent K-m and V-max values of 75 mm [H2O2] and 2.55 X 10(5) mumol H2O2 mumol heme(-1) s(-1), respectively. The enzyme is highly sensitive to 3-amino-1,2,4-triazole and NaN3, has a narrower optimal pH range than other catalases, and is more sensitive to **heat** inactivation. (5 pages)

L11 ANSWER 124 OF 133 USPATFULL on STN
ACCESSION NUMBER: 2003:17420 USPATFULL
TITLE: Novel methods of enzyme purification
INVENTOR(S): Gerendash, Joel, San Diego, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003013172	A1	20030116
APPLICATION INFO.:	US 2002-146662	A1	20020514 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-291122P	20010514 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: FISH & RICHARDSON, PC, 4350 LA JOLLA VILLAGE DRIVE,

SUITE 500, SAN DIEGO, CA, 92122
NUMBER OF CLAIMS: 41
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 7 Drawing Page(s)
LINE COUNT: 3513
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention relates to alpha amylases and to polynucleotides encoding the alpha amylases. In addition methods of designing new alpha amylases and methods of use and purification thereof are also provided. The alpha amylases have increased activity and stability at increased pH and temperature.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> d his

(FILE 'HOME' ENTERED AT 14:06:56 ON 11 MAR 2004)

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DISSABS, DDFB, DDFU, DGENE, DRUGB, DRUGMONOG2, ...' ENTERED AT 14:07:12 ON 11 MAR 2004

SEA (PSYCHROTROPH? OR PSYCHROPHIL? OR FLUORESCENS? OR SYRINGAE?

1	FILE ADISNEWS
404	FILE AGRICOLA
2	FILE ANABSTR
35	FILE AQUASCI
85	FILE BIOBUSINESS
10	FILE BIOCOMMERCE
564	FILE BIOSIS
423	FILE BIOTECHABS
423	FILE BIOTECHDS
725	FILE BIOTECHNO
794	FILE CABA
27	FILE CANCERLIT
775	FILE CAPLUS
66	FILE CEABA-VTB
1	FILE CEN
2	FILE CIN
2	FILE CONFSCI
4	FILE CROPB
114	FILE CROPU
117	FILE DISSABS
5	FILE DDFU
578	FILE DGENE
8	FILE DRUGU
7	FILE EMBAL
514	FILE EMBASE
687	FILE ESBIOBASE
129*	FILE FEDRIP
11	FILE FROSTI
113	FILE FSTA
646	FILE GENBANK
1	FILE HEALSAFE
38	FILE IFIPAT
61	FILE JICST-EPLUS
697	FILE LIFESCI
357	FILE MEDLINE
5	FILE NTIS
6	FILE OCEAN
459	FILE PASCAL
10	FILE PHIN
9	FILE PROMT
927	FILE SCISEARCH
239	FILE TOXCENTER
476	FILE USPATFULL
12	FILE USPAT2
2	FILE VETU

```
              72   FILE WPIDS
              72   FILE WPINDEX
               4   FILE NLDB
L1              QUE (PSYCHROTROPH? OR PSYCHROPHIL? OR FLUORESCENS? OR SYRINGAE?
                ---------

     FILE 'SCISEARCH, CABA, CAPLUS, BIOTECHNO, LIFESCI, ESBIOBASE, GENBANK,
     DGENE, BIOSIS, EMBASE, USPATFULL, PASCAL, BIOTECHDS, AGRICOLA, MEDLINE'
     ENTERED AT 14:11:33 ON 11 MAR 2004
L2          9026 S (PSYCHROTROPH? OR PSYCHROPHIL? OR FLUORESCENS? OR SYRINGAE?)
L3          2256 S L2 (S)(ISOLAT? OR PURIF?)
L4          1886 S L3 (S) (VECTOR? OR GENE? OR POLYNUCLEOT? OR INSERT? OR DNA?
L5           732 S L4 (S) FLUORESCENS?
L6           368 S L5 (S) COLI
L7           161 DUP REM L6 (207 DUPLICATES REMOVED)
L8           103 S L7 AND PY<=1999
L9           259 S L4 (S) (HEAT? OR TEMPERAT?)
L10          133 DUP REM L9 (126 DUPLICATES REMOVED)
L11          133 SORT L10 PY A

=> log h
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
                                                 ENTRY     SESSION
FULL ESTIMATED COST                              232.68     236.88

 SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 15:11:59 ON 11 MAR 2004
```

Freeform Search

Database: US Pre-Grant Publication Full-Text Database; US Patents Full-Text Database; US OCR Full-Text Database; EPO Abstracts Database; JPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

Term: L2 same (fLUORESCENs or SYRINGAE)

Display: 10 **Documents in Display Format:** - **Starting with Number** 1

Generate: ○ Hit List ◉ Hit Count ○ Side by Side ○ Image

Search Clear Interrupt

Search History

DATE: Thursday, March 11, 2004 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=PGPB,USPT,EPAB,JPAB,DWPI; PLUR=YES; OP=OR			
L7	l1 and nano.in.	1	L7
L6	L2 same (heat$3 or temperatur$3)	69	L6
L5	L2 same (fLUORESCENs or SYRINGAE) same (heat$3 or temperatur$3)	14	L5
L4	L2 same (fLUORESCENs or SYRINGAE)	113	L4
L3	L2 same (fLUORESCENS$3 or SYRINGAE$4)	123	L3
L2	L1 same (vector$3 or gene$3 or polynucleot$4 or insert$3 or dna$3 or plasmid$3)	204	L2
L1	(PSYCHROTROPH$4 OR PSYCHROPHIL$4 OR FLUORESCENS$4 OR SYRINGAE$4) same EXPRESS$4 same (ISOLAT$4 OR PURIF$4)	233	L1

END OF SEARCH HISTORY

Freeform Search

Database: US Pre-Grant Publication Full-Text Database
US Patents Full-Text Database
US OCR Full-Text Database
EPO Abstracts Database
JPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Term: L18 and (promote$4).ti.

Display: 10 **Documents in Display Format:** CIT **Starting with Number** 1

Generate: ○ Hit List ◉ Hit Count ○ Side by Side ○ Image

Search Clear Interrupt

Search History

DATE: Thursday, March 11, 2004 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=DWPI; PLUR=YES; OP=OR			
L25	9900492	10	L25
DB=USPT; PLUR=YES; OP=OR			
L24	(5459055 or 5786174 or 5872238 or 5969121 or 5981177).pn.	5	L24
L23	6294358.pn.	1	L23
L22	L16 and (promote$4 and (pseudomon$3 or coli or fluorescens or aeruginosa or syringae or putida)).ti.	0	L22
L21	L18 and (promote$4 and (pseudomon$3 or coli or fluorescens or aeruginosa or syringae or putida)).ti.	0	L21
L20	L18 and (promote$4 and pseudomon$3 or coli or fluorescens or aeruginosa or syringae or putida).ti.	8	L20
L19	L18 and (promote$4).ti.	134	L19
L18	(method$3 or proces$4) same (promote$4 or promoto$4) same (screen$4 or isolat$4 or identif$5) same (reporte$3 or (select$4 same marker$4))	2142	L18
L17	L16.ti.	0	L17
L16	(method$3 or proces$4) same (promote$4 or promoto$4) same (screen$4 or isolat$4) same (reporte$3 or (select$4 same marker$4))	1757	L16

L15	L14 same (identif$4)	71	L15
L14	L12 same (method$ or proce$4)	352	L14
L13	L12 same (pseudomon$3 or coli or fluorescens or aeruginosa or syringae or putida)	138	L13
L12	L11	1027	L12
DB=USPT,EPAB,DWPI; PLUR=YES; OP=OR			
L11	L10 same (luciferas$3 or galactosidas$4 or gfp$3)	1055	L11
L10	L9 same (isolat$4 or clon$3 or characteri$5)	8128	L10
L9	promot$3 same (reporte$4 or (select$4 same marke$4))	19729	L9
L8	L7 same (contamin$4 or impurit$4 or undesire$3)	1	L8
L7	L6 same (cell$3 or organism$3 or host$3)	208	L7
L6	taq$2 same polymeras$3 same (heat$3 or temperatur$4) same (inactivat$3 or denatur$4)	947	L6
DB=EPAB; PLUR=YES; OP=OR			
L5	373962	1	L5
DB=USPT; PLUR=YES; OP=OR			
L4	L2 heat$3 same inactiv$4 same protei$3 same (cell$3 or organism$3)	1299	L4
L3	(fluorescens or aeruginosa or syringae or putida) same heat$3 same (inactiv$4 or denatur$3)	30	L3
L2	heat$3 same inactiv$4 same protei$3 same cell$	1266	L2
L1	6080564.pn.	1	L1

END OF SEARCH HISTORY

Hit List

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 65 through 74 of 113 returned.

☐ 65. Document ID: US 5952208 A

Using default format because multiple data bases are involved.

L4: Entry 65 of 113 File: USPT Sep 14, 1999

US-PAT-NO: 5952208
DOCUMENT-IDENTIFIER: US 5952208 A

TITLE: Dsz gene expression in pseudomonas hosts

DATE-ISSUED: September 14, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Darzins; Aldis	The Woodlands	TX		
Xi; Lei	The Woodlands	TX		
Childs; John D.	The Woodlands	TX		
Monticello; Daniel J.	The Woodlands	TX		
Squires; Charles H.	The Woodlands	TX		

US-CL-CURRENT: 435/156; 435/252.34, 435/282

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. D

☐ 66. Document ID: US 5939601 A

L4: Entry 66 of 113 File: USPT Aug 17, 1999

US-PAT-NO: 5939601
DOCUMENT-IDENTIFIER: US 5939601 A

TITLE: Genes associates with enhanced disease resistance in plants

DATE-ISSUED: August 17, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Klessig; Daniel F.	Bridgewater	NJ		
Yang; Yinong	Piscataway	NJ		

US-CL-CURRENT: 800/279; 435/252.2, 435/320.1, 435/469, 435/470, 536/23.6

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 67. Document ID: US 5932698 A

L4: Entry 67 of 113 File: USPT Aug 3, 1999

US-PAT-NO: 5932698
DOCUMENT-IDENTIFIER: US 5932698 A

TITLE: Recombinant gene coding for a protein having endochitinase activity

DATE-ISSUED: August 3, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dubois; Michel	Buc			FR
Grison; Rene	Escalquens			FR
Leguay; Jean-Jacques	Auzeville Tolosane			FR
Pignard; Annie	Roquettes			FR
Toppan; Alain	Cornebarrieu			FR

US-CL-CURRENT: 530/350; 435/200, 435/201, 435/418, 435/419, 435/69.1, 435/69.7, 530/370, 530/379, 536/23.4, 536/23.6

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 68. Document ID: US 5932209 A

L4: Entry 68 of 113 File: USPT Aug 3, 1999

US-PAT-NO: 5932209
DOCUMENT-IDENTIFIER: US 5932209 A
** See image for Certificate of Correction **

TITLE: Bacillus thuringiensis .delta.-endotoxin

DATE-ISSUED: August 3, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thompson; Mark	Del Mar	CA		
Schwab; George E.	La Jolla	CA		
Schnepf; H. Ernest	San Diego	CA		
Stockhoff; Brian	San Diego	CA		

US-CL-CURRENT: 424/93.2; 424/832, 424/93.4, 424/93.461, 435/252.3, 514/12, 530/350, 530/825

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

☐ 69. Document ID: US 5859340 A

L4: Entry 69 of 113 File: USPT Jan 12, 1999

US-PAT-NO: 5859340
DOCUMENT-IDENTIFIER: US 5859340 A

TITLE: Recombinant gene coding for a protein having endochitinase activity

DATE-ISSUED: January 12, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dubois; Michel	Buc			FR
Grison; Rene	Escalquens			FR
Leguay; Jean-Jacques	Auzeville Tolosane			FR
Pignard; Annie	Roquettes			FR
Toppan; Alain	Cornebarrieu			FR

US-CL-CURRENT: 800/279; 435/200, 435/414, 435/416, 435/418, 435/419, 435/69.1, 435/69.7, 435/69.8, 435/70.1, 536/23.2, 536/23.4, 536/23.6, 536/24.1, 800/301

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

☐ 70. Document ID: US 5858786 A

L4: Entry 70 of 113 File: USPT Jan 12, 1999

US-PAT-NO: 5858786
DOCUMENT-IDENTIFIER: US 5858786 A

TITLE: Pseudomonas syringae pv Syrinagae hrpZ gene

DATE-ISSUED: January 12, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Collmer; Alan	Ithaca	NY		
He; Sheng-Yang	Lexington	KY		

US-CL-CURRENT: 800/298; 435/252.3, 435/320.1, 435/325, 435/418, 435/69.1, 435/71.2, 435/874, 536/23.1, 536/23.7, 800/301

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

☐ 71. Document ID: US 5840554 A

L4: Entry 71 of 113 File: USPT Nov 24, 1998

US-PAT-NO: 5840554
DOCUMENT-IDENTIFIER: US 5840554 A
**** See image for Certificate of Correction ****

TITLE: .beta.-Endotoxin expression in pseudomonas fluorescens

DATE-ISSUED: November 24, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thompson; Mark	Del Mar	CA		
Schwab; George E.	La Jolla	CA		

US-CL-CURRENT: 435/471; 424/405, 424/538, 435/252.34, 435/320.1, 435/480, 435/69.7, 514/2, 530/350, 536/23.4, 536/23.71

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

---

☐ 72. Document ID: US 5827514 A

L4: Entry 72 of 113 File: USPT Oct 27, 1998

US-PAT-NO: 5827514
DOCUMENT-IDENTIFIER: US 5827514 A
**** See image for Certificate of Correction ****

TITLE: Pesticidal compositions

DATE-ISSUED: October 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bradfisch; Gregory A.	San Diego	CA		
Thompson; Mark	San Diego	CA		
Schwab; George E.	La Jolla	CA		

US-CL-CURRENT: 424/93.2; 424/93.1, 424/93.3, 435/252.3, 435/410, 435/418, 435/419, 435/69.1, 435/69.7

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

---

☐ 73. Document ID: US 5817502 A

L4: Entry 73 of 113 File: USPT Oct 6, 1998

US-PAT-NO: 5817502
DOCUMENT-IDENTIFIER: US 5817502 A

TITLE: Genes for the synthesis of pyrrolnitrin

DATE-ISSUED: October 6, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ligon; James M.	Apex	NC		
Hill; Dwight Steven	Cary	NC		
Lam; Stephen Ting	Raleigh	NC		
Hammer; Philip E.	Cary	NC		
van Pee; Karl-Heinz	Bannewitz			DE
Kirner; Sabine	Puchheim			DE

US-CL-CURRENT: 435/252.34; 435/117, 435/252.3, 435/252.33, 435/320.1, 435/69.1, 435/71.1, 536/23.2, 536/23.7

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

---

☐ 74. Document ID: US 5811654 A

L4: Entry 74 of 113 File: USPT Sep 22, 1998

US-PAT-NO: 5811654
DOCUMENT-IDENTIFIER: US 5811654 A

TITLE: Plants genetically enhanced for nutritional quality

DATE-ISSUED: September 22, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Jaynes; Jesse M.	Baton Rouge	LA		
Derrick; Kenneth S.	Lake Alfred	FL		

US-CL-CURRENT: 800/298; 435/419, 435/69.1, 800/301

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

---

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
L2 same (fLUORESCENs or SYRINGAE)	113

Display Format: - Change Format

Previous Page Next Page Go to Doc#